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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/732,840	12/10/2003	Colin Richard Wilson	RD28081-3	6696

7590 02/18/2005

General Electric Company
CRD Patent Docket Rm 4A59
Bldg. K-1
P.O. Box 8
Schenectady, NY 12301

EXAMINER

KEANEY, ELIZABETH MARIE

ART UNIT	PAPER NUMBER
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2882

DATE MAILED: 02/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/732,840

Applicant(s)

WILSON ET AL.

Examiner

Elizabeth Keaney

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5,6,8,9,11 and 12 is/are rejected.
- 7) ☒ Claim(s) 4,7 and 10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
 - 2) ☒ Certified copies of the priority documents have been received in Application No. 09/682,494.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/10/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

Claims 1,2 and 4-12 objected to because of the following informalities:

- Claims 1,2,5,6,8,9,11 and 12: The use of the term “low angle” is ambiguous and fails to clearly describe the angle. For the purpose of examination, the Examiner has interpreted “low angle” as an acute angle, which is defined as an angle less than 90 degrees.
- Claims 4,7,12: It is unclear to the Examiner how the central recess “houses” the accelerating electrode”. As best understood by the Examiner from the figures, it appears that the accelerating electrode is positioned within the central recess of the accelerating electrode and for the purposes of examination has been interpreted as such.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 11 is rejected under 35 U.S.C. 102(b) as being anticipated by Schild (US Patent 5,828,727).

Schild discloses, in figure 1 and throughout the disclosure, an x-ray source comprising:

- means for generating an electron beam (5);
- means for accelerating electrons (4) in the electron beam away from the generating means; and
- means for generating x-ray beams (10) when the electron beam impinge thereon at a low angle (column 4, line 8).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schild in view of Chidester et al. (US Patent 6,438,207; hereinafter Chidester).

Re claims 1 and 5: Schild discloses, in figure 1 and throughout the disclosure, an x-ray source comprising:

- a cathode (5) for generating an electron beam (ES);
- an accelerating electrode (4) comprising an aperture through which the electron beam from the cathode passes;
- an anode (10) positioned so that the electron beam impinges thereon at an acute angle (column 4, line 8).

However, Schild fails to teach or fairly suggest the aperture of the accelerating electrode to be selectable.

Chidester discloses an accelerating electrode having a selectable aperture (column 10, lines 5-6).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the accelerating electrode of Schild to have a selectable aperture because it controls electron distribution and intensity on the anode at the focal point, thereby improving the x-ray emission (Chidester; column 10, lines 8-10).

The Examiner notes that the method step of claim 1 merely requires the operation of the structure included in claim 5 and is therefore anticipated for the same reason.

Re claim 3: Schild discloses, in figure 1 and throughout the disclosure, the focal spot (BF) formed on the outer periphery of the anode (10) surface.

Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schild and Chidester as applied to claims 1 and 5 above, and further in view of Danos (US Patent 5,029,195).

Schild as modified by Chidester teach all the limitations as shown above.

However, they fail to teach or fairly suggest the acute angle being at most about twenty degrees.

Danos discloses impinging the electron beam on the anode surface at an angle between 1-5 degrees (column 2, lines 3-4).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to impinge the electron beam of Schild and Chidester at an angle of at most twenty degrees because it optimizes x-ray deflection and decreases heat produced by the anode (Danos; column 1, lines 43-47).

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schild as applied to claim 11 above, and further in view of Danos.

Schild teaches all the limitations as shown above.

However, Schild fails to teach or fairly suggest the acute angle being at most about twenty degrees.

Danos discloses impinging the electron beam on the anode surface at an angle between 1-5 degrees (column 2, lines 3-4).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to impinge the electron beam of Schild at an angle of at most twenty degrees because it optimizes x-ray deflection and decreases heat produced by the anode (Danos; column 1, lines 43-47).

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schild and Chidester.

Schild as modified by Chidester teach all the limitations as shown above.

However, they are silent as to the system the x-ray source is used in.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the x-ray source within an imaging system comprising the source coupled to a gantry and a detector because it would improve the emission of x-rays from the source.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schild and Chidester as applied to claim 8 above, and further in view of Danos.

Schild as modified by Chidester teach all the limitations as shown above.

However, they fail to teach or fairly suggest the acute angle being at most about twenty degrees.

Danos discloses impinging the electron beam on the anode surface at an angle between 1-5 degrees (column 2, lines 3-4).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to impinge the electron beam of Schild at an angle of at most twenty degrees because it optimizes x-ray deflection and decreases heat produced by the anode (Danos; column 1, lines 43-47).

Allowable Subject Matter

Should the above objections be overcome, Claims 4,7 and 10 would be objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in

independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The best prior art of record discloses an x-ray source comprising a cathode, a selectable shaped aperture in an accelerating electrode and an anode, wherein the electron beam produced by the cathode impinges the anode at an acute angle. However, the prior art fails to teach or fairly suggest an x-ray source wherein the accelerating electrode is positioned within a central recess of the anode, as claimed in claims 4,7 and 10.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth Keaney whose telephone number is (571)272-2489. The examiner can normally be reached on Monday-Thursday 5:30-4.

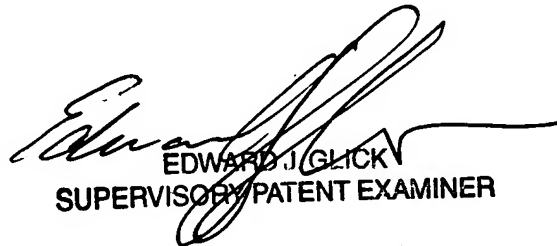
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571)272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2882

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER